DOCUMENT RESUME

ED 262 771 IR 011 851

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TITLE Not Since Gutenberg: Microcomputers and Reading.
PUB DATE Apr 84
NOTE 13p.; Paper presented at the National Conference of the Instructional Resource Center (New York, NY, April 13-15, 1984).
PUB TYPE Viewpoints (120) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Childrens Television; *Computer Assisted Instruction; *Computer Literacy; Computer Software; Educational Television; Instructional Innovation; *Microcomputers; *Reading Instruction; Reading Skills; Teaching Methods; *Television Viewing
IDENTIFIERS *Computer Uses in Education

ABSTRACT

Designed to promote the use of microcomputers in reading instruction, this paper attempts to dispell apprehensions that the errors made when adapting television to the classroom may occur again with microcomputers. Examples of the failure of television to teach reading in the 1960s and 1970s are presented, and it is pointed out that television, a watching medium that delivers a lot to the viewer while demanding little more than passivity, has not had any remarkable influence on student performance. It is then suggested that the microcomputer provides an interactive ability that television lacks, and specifically notes that it is a medium which combines the visual with the kinesthetic. It is suggested that the role of the reading specialist in the future will be first to teach computer literacy, then to transfer interest to books. The lack of successful software programs for reading instruction is noted; however, some promising college level computer assisted instruction (CAI) programs are identified and described. Concluding remarks cite the responsibilities of classroom personnel for microcomputer utilization and its potential for producing students who are competent readers and writers. A 14-item bibliography completes the document. (JB)

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Not Since Gutenberg: Microcomputers and Reading

Cecelia McCall, Ph.D.

All of us in attendance at this conference are embarked upon a voyage of discovery into the realm of computer technology, one small aspect of a fantastic trip that will extend far into the twenty-first century. Those of us who are classroom personnel will be accompanied by students who may have already been exploring the possibilities of computer technology. If we are wise, we will allow them to participate as co-captains, if not captains of the ship. Those who have grown up with microcomputers in their homes are as comfortable with them as we have been using the telephone.

The computer is here to stay. Though it may not be in your classroom yet, eventually it will be and that is sooner than later. Since this is the beginning of a new venture, I want to admonish that the true strengths and application of the computer and microcomputer to teaching be discovered. Instruction can be enhanced, supplemented and augmented if the capacity of this new medium is exploited appropriately. It is incorrect however, to attempt to take the contents of one medium and superimpose them on another. An apprehension that persists is that the errors made when attempting to adapt television to the classroom may again occur with computers. More than a decade ago it was predicted that television would revolutionize education; that it would change the structure of the classroom and role of the teacher. Some critics feel that it has done just that, but in a negative, not

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positive way. Television has changed the dynamics of the classroom because it changed the student. We failed to notice that the thousands of viewing hours engaged in by our students before they enter a formal classroom have produced individuals with an expectation of being "turned-on" if they are not to "tune -out."

Since it is necessary to review previous missions while planning a flight, let us look at some attempts to adapt television to the teaching of reading:
As one would expect, teaching reading via television was a major preoccupation of the the '60's and '70's as was early pre-school instruction in reading.

Two television programs created to develop readiness for reading and to teach it were Sesame Street and The Electric Company. Both received a great deal of attention from researchers. Neuman (1980) cites Sesame Street as a stimulant to reading and states that it is a prototype of the predominant trend of using children's interest in media to teach basic skills in the home and school, and Dunn reports a study which was conducted with three-year olds to determine the effectiveness of a television program in teaching reading skills. There was no significant difference between an experimental group of three-year olds who watched "Wordland Workshops" and a control group who watched "Captain Kangaroo" over a 39 week interval.

From 1976 to 1979 the interest in The Electric Company and the attempt to develop reading instruction based upon television programs continued.

One method was an attempt to use television commercials for reading instruction; another was the use of puppets representing letters of the alphabet. Some teachers, however, expressed doubt about the efficacy of television as a teaching tool. Berg (1978) in an article, There Was a Door To Which I Found No Key, represents television as the culprit that reduces the cognitive processes to the level of dream imagery and fantasy. Partridge (1978) in Can TV Do It? proposes that some of the negative consequences of television viewing are shallow reading, impatience with long prose selections, and the pursuit of easy reading. Hutchison (1978) is a proponent of the "if you can't beat them, why not join them philosophy." Her article, Since They Are Going to Watch TV Anyway, Why Not Connect It To Reading?, describes the development of a learning model for poor readers based upon their television watching proclivities.

A computer search of the literature disclosed only 18 articles or studies using television as as instructional tool of the '80's. A review of the data indicates that there is concern for such factors as the effect of television viewing on reading and the use of television to motivate students to read more. One recounted the problems of learning to read in the television age and the development of a new alphabet, UNIFON, that was supposed to solve the literacy crisis. Another, Classroom Questioning Techniques: The TV Taxonomy of Questions ( ), describes a questioning taxonomy that is intended to stimulate critical thinking skills among those students who find the terminology of traditional skill taxonomies confusing and elusive. It is comprised of six levels of questions. Each level is given the name

of a television program that reflects the way students think and is accompanied by a list of the subskills or cognitive processes used at that level. The six levels, ranging from low to high levels of cognitive stimulation, are as follows: (1) My Mother The Car, questions that require the student to think at the literal level; (2) The 11:00 News, questions that require students to reorganize and paraphrase known material; (3) In Search Of, questions that require students to speculate about possible conclusions based on inferences; (4) Columbo, questions that ask students to weigh information and draw conclusions about its validity; (5) The French Chef, questions requiring students to apply and transfer information from one situation to another and (6) The Super Bowl, questions that require students to be involved in the answers.

Regardless of the energy and creativity of practitioners, television, a watching medium that delivers a lot to the viewer while demanding little more than passivity, has not had any remarkable influence on student performance. Social scientists like Winn (1977) say that television viewing is a one-way transaction that requires the taking in of particular sensory material, in a particular way, no matter what the material may be. It does not enhance verbal development because it does not require verbal participation on the part of the viewer. It has even been likened to a drug that induces a torpor-like trance. It certainly has become a habit, if not an addiction. It wakes us up in the morning, greets us when we arrive home in the evening, and lulls us to sleep at night. Winn further suggests that television viewing which presents a strong image that does not have to be decoded and manipulated by the mind might interfere with the kind of image creating that needs to occur

when reading. It may interfere with the ability to create one's own fantasies. Even when a novel is adapted for the tube, the actor associated with a character is identified as the image. The actor's portrait is reproduced on book covers to sell subsequent editions. (This occurs with films too, of course.) Merrill Streep as both The French Lieutenant's Woman and Sophie of Sophie's Choice can be seen gazing ecstatically, if not tearfully, from a shelf in your favorite bookstore.

It might be that theorists and practitioners have been searching for ways to promote academic achievement through television exercises, they may have overlooked its pervasiveness and dominance in the lives of children -- 25 to 30 hours per week -- and its contributing to poor academic performance as well as the creation of behavioral problems. Even if its role in behavioral modification is debatable, it must be considered. Winn says, a child who has watched television for a quarter of his waking hours during the critical years of development, ages two to six, will be different, in important and discernable ways from a child who has not watched television.

While evidence is still being amassed to prove the detrimental effects of television on the young viewers, I would like to suggest that both computers and microcomputers may be the classroom tools long awaited. They are print compatible and software can and will be written that enhances, stimulates, and achieves a major goal of education - self-directed, self-motivated, inquisitive eager learners.

If television viewing has contributed to the evolution of non-verbal

students with declining SAT scores, the new technology can re-verbalize students. If television viewing has contributed to the disinterest in and indifference to the pursuit of excellence, microcomputer interaction has the capacity to make perfectionists of us all. If television viewing has led to the expectation that teachers have to "turn-on" children and young adults just as the television is turned on, the microcomputer provides self-generated enjoyment in learning. If television has produced a tuned-out generation that can not listen, concentrate, or interact with either the teacher or other students -- unless syncopated or animated, the microcomputer can re-involve students through multisensory interactive modes.

If television has produced families of children isolated from their parents as each watches his own set, doing his own thing, the microcomputer can rejoin (if TV is the culprit?) this unit, since programming, processing, gaming and simulation are as much group activities as they are individual.

The microcomputer is compatible with print -- indeed, it is not a medium which is an extension of the hand (McLuhan,), as the typewriter is, but is an extension of the eye, as televisions is, and can even be an extension of the voice. The microcomputer is a medium which combines the visual and the kinesthetic. It is an active-productive-thought processing mode which enhances creative, verbal, visual and motor skills. It can make every youngster a developer of his or her own reading materials, and it is going to speed up the entire learning process since reading and writing will develop simultaneously. It will lead to the redefinition of remedial education, since ensuing generations will be receiving instruction in this mode. There will be a new definition of the disadvantaged.

The gap that exists between the privileged and underprivileged will increase as middle class and affluent youngsters enter school with computer literacy and skills that have been growing while the children of the poor have not had much opportunity to handle books, let alone computers.

Ponder a moment, the differences that are going to exist among well-to-do and poor school districts. Some states have already begun to allocate money to districts to buy computers on the basis of the income of the districts. Children of the poor will be doubly illiterate, both in print and in computers.

The role of the reading specialist of the future will probably be first to teach computer literacy, then to transfer interest to books, if there are books.

Books will become collectors' items, manuscripts and art forms, as the proliferation of print is transferred to the computer and as discs are used for information storage. Print became a mass medium when Johann Gutenberg invented the printing press. The oral mode of information storage through drama and poetry was replaced by prose in print. As one medium replaces another, the former becomes elevated to an art form. Such is the case with film. When it was replaced by television as the mass entertainment mode, movies became films as the language to describe them changed. We no longer go to the movie to see a picture. We go to the cinema to see a film.

Similarly, as the computer and microcomputer replace television as the

dominant mode, the viewer is no longer satisfied with the fleeting, greedy, comsumable pulp of TV. Viewers want to record and collect tapes to view as they wish, not at the stepped-up hyphenated pace of television. The content of television will probably improve. Interactive television, which allows the viewer to manipulate visual materials, is a direct result of computer technology. It's developers hope that it will enable that medium to evolve into a more mature form.

Since the microcomputer is a print-compatible medium, it can be adapted effectively to the needs of classroom instruction. Students and teachers can compose, edit, review, revise, store and retrieve materials as needed. My use of the computer to access references for this paper indicates one of the ways that it is changing research techniques. It is fast becoming the dominant means of storing data (if not already). It will be the card file and index that either researchers consult directly, or their library aids. It will eliminate that arduous first task, and will reduce the number of steps between the first and final printout.

Microcomputer uses in the classroom are limitless, restricted only by imagination. That is the problem with much of the currently available software. The programs have merely transferred workbook exercises to discs. Students are required to do little more than press a key. Sandberg-Diment in the Personal Computer column of the New York Times (1983) states that educational software most often resembles expensive versions of simple flash cards and more complex but impractical electronic encyclopedias. Caldwell (1984) claims that what passes for courseware today neither helps to develop higher level cognitive skills nor challenges learners to use higher order learning strategies. Most lessons utilize

a drill and practice format in which the computer asks a question and requires the student to respond. Many "so-called" tutorial programs are no improvement.

Meribeth Henney, in a paper at the annual meeting of the Iowa Council of the IRA in 1982, states that of the programs available for microcomputers, only a few are applicable for reading instruction, while those that are used are most frequently drill and practice. Such programs focus on reading skills like letter recognition, word alphabetization, and sight words. Very few programs are concerned with comprehension.

George Mason (1983) reports some CAI programs in use at the college level. Among them are a critical reading program at Brigham Young University used to supplement class discussion. Another program at Fort Valley State College is designed to teach students to find the main idea of a passage. Another at the University of Montana is used to improve reading speed. They are at best limited and short sighted and transfer to the computer that which is better left where it is -- on a shelf in a workbook.

On the other hand, some good things are occurring. Levin and Doyle (1983) report a program at a community college that uses CAI word processing software to write reports, themes and essays on a microcomputer. This type of work exploits the strength of the microcomputer which is full-text production. Assignments on a microcomputer should be those that deal with reading and writing in a holisitic way. It is not a medium for words isolated from context, phrases or fill-in exercises. Collins (1983) reports a program which is an information storage and retrieval system.

He claims that "Dynamic Books" has become part of an interactive text that allows the student to browse to find information about particular topics or questions. The "browser" provides both a table of contents index and a subject index, parts of which can appear on the screen at the same time as the book's text. Through on-line dictionaries and thesauri, students can merely point to a word they do not understand and its definition is given automatically. Writing coaches, in this program, are used in all phases of the process; helping students to plan prior to writing, giving advice as the student writes and suggesting how to revise a draft when completed. The text editor lets students see the text on a display screen as it is typed and moves the text around to make room for additions while removing extra spaces caused by deletions.

Colleges are encouraging staff to acquire microcomputers, even making funds available to alleviate the cost of such an investment. Special faculty development courses are being given, such as the one at the City University of New York, to teach academicians how to program and author software. Classroom personnel should be writing the software and designing lessons that enhance the creative capacities of their students. Practitioners will not only become more enthusiastic about their profession but will also acquire self esteem as they re-discover that they are the masters of the "word." It is this mastery, taught and acquired simultaneously, that will finally produce students who are competent readers and writers.

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